

**NEUROPSYCHOLOGY AND COPING STYLES OF HIV/AIDS INFECTED
INDIVIDUALS OF MANIPUR**

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Abstract

The present study has attempted to examine the relationship of coping strategies and auditory verbal learning and memory among HIV/AIDS infected males and females. One hundred males and one hundred females infected with HIV/AIDS were interviewed and administered the Auditory Verbal Learning Test of Nimhans Neuropsychological Battery and Coping Check List. Results revealed that the more problem focused is used as coping strategies by males the greater ability of verbal learning and memory. The more emotion focused and social support is used by the males the more error in the test. Results also shows that among females using social support as coping strategies enhances performance of Auditory Verbal Learning and Memory whereas emotion focused hinders the performance in the test.

Keywords: Auditory Verbal Learning and Memory, Coping Strategies, HIV/AIDS and Neuropsychology

INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS) is a disease caused by a virus named Human Immunodeficiency Virus (HIV) and is characterized by immunosuppression, which leads to a spectrum of clinical manifestations that include opportunistic infections, secondary neoplasms, and neurologic manifestations. After gaining entry into a body, either through exposure to blood, body fluids, or sexual activity, the virus often enters a dormant stage

lasting 2-15 years. The virus persists in the body for life and a person who is HIV antibody positive (Seropositive) is considered to be infectious. The clinical features of HIV infection range from asymptomatic infection to severe clinical illness and AIDS. The time for the onset of symptoms varies from five to six months to few years, and may be influenced by the source of HIV infection, age, gender, drug habits, immunogenetics, and other factors, (Rajendran&Sivapathasundharam, 2006).

Episodic memory impairment is highly prevalent in HIV, with most estimates ranging from 40 to 60% (Heaton et al. 1995; Rippeth et al. 2004). HIV-associated deficits in episodic memory are readily observed on a variety of verbal (e.g., word lists and passages) and visual (e.g., simple and complex designs) tasks. Numerous studies show that HIV-associated deficits in free recall of verbal material are marked by diminished use of strategic organizational strategies, such as semantic clustering (Peavy et al. 1994), which may increase in magnitude with the severity of HIV associated neurocognitive disorder (Gongvatana et al. 2007b).

Persons who receive a diagnosis of HIV or AIDS often react with a mixture of emotions, including shock, depression, hopelessness, grief, anger and fear (Fleishman & Vogel, 1994). The complexities of stress have an effect on coping and psychological well-being (Russell & Smith, 1999).

MATERIALS AND METHODS

Sample

The sample of the present study comprised of 200 HIV/AIDS infected males and females within the age group of 20 to 50 years residing in Manipur.

Measure

A semi structured Performa was designed to map the socio-demographic details. Apart from that Coping Check List (CCL., Rao et al., 1989) was used to assess the participant's coping pattern. The CCL is a self-report inventory comprising 70 items, which covers a wide range of behavioural, cognitive and emotional response to handle stress. Items are scored dichotomously in a yes/no format, the responses indicating presence or absence of a particular coping behaviour. Further refinement of the tool resulted in 7 subscales: 1 for Problem Solving, 5 for Emotion focused coping (denial/blame, distraction positive, distraction negative acceptance and religion/faith) and 1 for social support seeking. The test retest reliability (over 1 month) is 0.74 and the internal consistency is 0.86 as established by the authors.

NIMHANS Neuropsychological Battery (Rao et al., 2004): The NIMHANS Neurological Battery consists of a series of tests aimed to assess various aspects of cognitive function including attention, memory, language, visual-spatial ability and executive functions. One particular test included in this battery is **Auditory verbal learning Test (Schmidt, 1996)**

which measures verbal learning and memory. It consists of words designating familiar objects like vehicles, tools, animals and body parts. There are two Lists A and B, with 15 different words in each List. Words in List A are presented at the rate of one word per second during 5 successive trials. The words are presented in the same order in every trial. Each trial consists of the presentation of all 15 words, immediately followed by recall of the same. After the completion of all the five trials of List A, words in List B are presented once and an immediate recall is taken for the same. The presentation of List B serves as interference and prevents the subject from recalling the words from List A subsequently from immediate memory. This is followed by the immediate recall of words from List A. After a delay of 20 minutes, words from List A are again recalled to form the delayed recall score. List A is not read out again for immediate and delayed recall. Following delayed recall, recognition of the words in list A is tested. The words in List A are randomly mixed with 15 new words. The new words are either phonemically or semantically similar to words in List A. The words are called out one at a time and the subject indicates whether each word belonged to List A or not. Hits and errors are recorded. Scores measures learning, immediate and delayed memory.

HIV/AIDS infected individuals meeting the inclusion and exclusion criteria were selected from different ART centres located at Manipur. After obtaining written informed consent, participants completed the socio-demographic details, Auditory Verbal Learning Test and Coping Check List by all participants.

STATISTICAL ANALYSIS

The data was than processed through SPSS Version 16 and Pearson Correlation test was applied wherever found suitable and interpretation was made accordingly.

RESULTS

The results in Table-A shows that significant differences between males and females were found in the scores of No. of correct in Trial 2 (p-value = 0.006), No. of correct in Trial 3 (p-value=0.000), No. of correct in Trial 4 (p-value=0.000), No. of correct in Trial 5 (p-value = 0.000), Total no. correct (p-value=0.000), No. of correct in Immediate Recall (p-value = 0.000), No. of correct in Delayed recall (p-value = 0.000), Long Term Percent Retention (p-value=0.000), No. of correct in Recognition (p-value=0.000), No. of Misses in Recognition (p-value=0.000) and No. of False Alarm in Recognition (p-value=0.000). In all the significant scores females have shown more Adequacy than males indicating that females have better ability of verbal learning and memory than the males.

TABLE-A

Auditory verbal learning-wise distribution of study samples over the genders

Neuropsychological Component	Female	Male	Total	χ^2	d.f.	P-value
No. of correct in trial1						
Adequate	55	54	109	.020	1	.887
Inadequate	45	46	91			
Total	100	100	200			
No. of correct in trial2						
Adequate	59	42	101	5.781	1	.016*
Inadequate	41	58	99			
Total	100	100	200			
No. of correct in trial3						
Adequate	70	41	111	17.026	1	.000**
Inadequate	30	59	89			
Total	100	100	200			
No. of correct in trial4						
Adequate	43	35	78	1.345	1	.246
Inadequate	15	0	15			
Total	42	65	107			
No. of correct in trial5						
Adequate	58	33	91	12.602	1	.000**
Inadequate	42	67	109			
Total	100	100	200			

Total no. correct						
Adequate	44	30	74	4.204	1	.040*
Inadequate	56	70	126			
Total	100	100	200			
No. of correct in list B						
Adequate	69	63	132	.802	1	.370
Inadequate	31	37	68			
Total	100	100	200			
No. of correct in Immediate recall						
Adequate	69	34	103	24.522	1	.000**
Inadequate	31	66	97			
Total	100	100	200			
No. of correct in Delayed recall						
Adequate	68	39	107	16.903	1	.000**
Inadequate	32	61	93			
Total	100	100	200			
Long term percent retention						
Adequate	87	65	152	13.268	1	.000**
Inadequate	13	35	48			
Total	100	100	200			
No. of correct responses in recognition						
Adequate	63	37	100	13.520	1	.000**
Inadequate	37	63	100			
Total	100	100	200			

No. of misses in recognition						
Adequate	62	42	104	8.013	1	.005**
Inadequate	38	58	96			
Total	100	100	200			
No. of false alarm in recognition						
Adequate	76	52	128	12.500	1	.000**
Inadequate	24	48	72			
Total	100	100	200			

** Correlation is significant at 0.01 levels

* Correlation is significant at 0.05 levels

The results of table-B shows significant positive correlation between number of hit in trial4, total number of hit and problem focused and negative correlation between number of hit in trial 4 and social support, also in number of misses in recognition and problem focused. Also positive correlation between emotion focused and number of false alarm in recognition. The results reveals that the more problem focused is used as coping strategies the greater ability of verbal learning and memory. The more emotion focused and social support is used the more error in the test.

TABLE-B

Correlation between Auditory Verbal Learning Test and Coping Strategies (male)

Auditory Verbal Learning Test	Dimension of coping strategies		
	Problem Focused	Social Support	Emotion Focused
Number of Correct in Trial 1	.180	-.109	-.035
Number of Correct in Trial 2	.172	-.056	-.013
Number of Correct in Trial 3	.110	-.085	.097

Number of Correct in Trial 4	.221(*)	-.210(*)	-.049
Number of Correct in Trial 5	.148	-.030	.081
Total number of Correct)	.202(*)	-.121	.022
Number of Correct in List B	.073	.035	.157
Number of Correct in Immediate Recall	.046	-.026	-.035
Number of Correct in Delayed Recall	.176	.005	-.067
Long Term Percent Retention	.100	.067	-.160
Number of Correct in Recognition	.192	.153	.021
Number of misses in Recognition	-.214(*)	-.145	-.051
Number of false alarm in Recognition	.193	.065	.211(*)

** Correlation is significant at 0.01 levels

* Correlation is significant at 0.05 levels

The results of table-C shows highly significant positive correlation between problem focused and number of hit in Trial2, significant positive correlation between problem focused and number of hit in trial3, total number of hit, significant negative correlation between problem focused and long term percent retention. It also highlights highly significant negative correlation between false alarm and social support, significant negative correlation between social support and number of hit in list B, number of misses and significant positive correlation between number of hit in recognition and social support and significant negative correlation between emotion focused and delayed recall in recognition. The more social support is utilized the lesser will be number of misses and false alarm and the hit in recognition. Also the more emotion focused is utilized as coping strategies the lesser will be the amount of delayed recall. This particular finding has shown that social support enhances auditory verbal learning and memory whereas emotion focused will hinder the performance in the test.

TABLE-C

Values of Correlation between Auditory Verbal Learning Test and coping checklist (female)

Auditory Verbal Learning Test	Dimension of coping strategies		
	Problem Focused	Social Support	Emotion Focused
Number of Correct in Trial 1	.181	.168	-.151
Number of Correct in Trial 2	.376(**)	.158	-.124
Number of Correct in Trial 3	.203(*)	.108	-.098
Number of Correct in Trial 4	.062	-.145	-.159
Number of Correct in Trial 5	.094	-.110	-.095
Total number of	.213(*)	.014	-.144

Correct)			
Number of Correct in List B	.066	-.247(*)	.034
Number of Correct in Immediate Recall	.006	-.048	-.180
Number of Correct in Delayed Recall	-.124	-.030	-.198(*)
Long Term Percent Retention	-.228(*)	.120	-.060
Number of Correct in Recognition	-.086	.200(*)	.044
Number of misses in Recognition	.141	-.199(*)	-.061
Number of false alarm in Recognition	.024	-.313(**)	-.001

** Correlation is significant at 0.01 levels

* Correlation is significant at 0.05 levels

DISCUSSION

Females have better ability of verbal learning and memory than the males. This results contradicts with findings of what Satz et al. (1993) claim regarding a greater vulnerability to neuropsychological disorders in seropositive women than in seropositive men. This could be because the samples of the study were on ART and it could be the positive effect of the therapy which led the women performs better. A study by Jose Maria et al., (2013) has found that seropositive men obtained higher scores in attention, abstract reasoning and visual memory when compared with seropositive women but the differences were found to be

insignificant. Further research is required to confirm the reason of the difference in performance of the test. However, few studies which have undertaken a comparison of HIV-positive women and men have not found important differences in their neuropsychological performance (Pereda et al., 2000, Rabkin et al., 2000 and Jose Maria et al., 2013).

Results revealed that the more problem focused is used as coping strategies by males the greater ability of verbal learning and memory. The more emotion focused and social support is used by the males the more error in the test. Results also shows that among females using social support as coping strategies enhances performance of Auditory Verbal Learning and Memory whereas emotion focused hinders the performance in the test.

The findings of the present study shows an association of neuropsychological deficit and coping mechanism which is in similar line with previous study done by Jennifer et al., (1997), where persons rated as being neuropsychologically impaired in attention/speed of information processing and verbal skills utilized significantly more confrontive coping than did unimpaired subjects. It may be that individuals with difficulty sustaining attention to details or reduced ability to process verbal information resort to impulsive forms of coping because they are less able to assess the precise nature or extent of threat or harm posed by a stressful situation. For both gender emotion-focused coping hinders their neuropsychological performance and this could be because it does not remove the stressor, as it does not deal with the root cause of the problem which could provide a long term solution.

CONCLUSION

Females performed better than males in verbal learning and memory contradictory to previous study which shows an in depth study is required to know the factors leading to the difference. Study further explored that emotion focused coping strategies hinders the neuropsychological performance for both gender. Adaptive coping strategies should be encouraged to help individuals with HIV/AIDS lead a mentally healthy life and solve problems in life.

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